

Muhammad Irfan

PHD CANDIDATE · COMPUTER SCIENCE ENGINEERING

☎ +974 30531622 | ✉ irfanbabar42@gmail.com | 📞 0000-0003-1387-6784 | 🌐 irfanbabar42

Research Focus & Interests

My research focuses on cybersecurity for cyber-physical systems, with an emphasis on physical-layer security, radio frequency fingerprinting, and adversarial deep learning. I explore secure communication protocols in smart grids and embedded systems, addressing challenges such as jamming, spoofing, and device authentication through real-world testbeds and AI-driven methods.

Education

PhD in Computer Science Engineering

HAMAD BIN KHALIF UNIVERSITY (HBKU)

Aug, 2022 - Nov, 2025

Doha, Qatar.

- **Advisor:** Dr. Gabriele Oliveri
- **Thesis:** Physical Layer Security In Power Line Communications Via Deep Learning
- **Research Interest:** Smart Grid Security, Physical Layer Security, Radio Frequency Fingerprinting

M.Sc in Computer Engineering

UNIVERSITY OF ENGINEERING AND TECHNOLOGY (UET)

Sep, 2017 - Sep, 2019

Taxila, Pakistan.

- **Advisor:** Dr. Muhammad Asif Khan
- **Thesis:** Design and Analysis of Key-Based Substitution Box (S-Box) using Robust Chaos

B.Sc Computer Engineering

BAHAUDDIN ZAKARIYA UNIVERSITY (BZU)

2012 - 2016

Multan, Pakistan.

- Supervisor: Engr. Yasir Aziz
- Final Year Project: Video Steganography with Least Significant Bit

Teaching & Professional Experience

Fall'25	DIGI3133 -Cybersecurity Risk Management, TA	Arkansas State University, Qatar.
Fall'25	CPEG462-Cybersecurity Fundamentals, Teaching Assistant	CSE, HBKU.
Spring'24	CYSE610-Multimedia Security, Teaching Assistant	CSE, HBKU.
Fall'23	CYSE610-Applied Cryptography, Teaching Assistant	CSE, HBKU.
Spring'23	CPEG462-Cybersecurity Fundamentals, Teaching Assistant	CSE, HBKU.
Fall'19	CP306-Embedded Systems & Application Design, Teaching Assistant	CPED, UET.
Spring'18	CP405-Advanced Topics in Computer Engineering, Teaching Assistant	CPED UET.
2022-2022	Research Assistant, Graph Lab, University of North Texas, Denton, TX, USA.	5-Months
2017-2019	Research Assistant, UET Taxila, Pakistan.	2-Years
2016-2017	Android Developer, AppTechnologies Multan, Pakistan.	10-Months

Awards, Fellowships, & Grants

Dec 2024	National Cybersecurity Competition CTF, Qatar University, Doha.	(QAR 1500)
2022-2026	CSE Scholarship, Hamad Bin Khalifa University, Doha Qatar.	-
2022	CSE Award, University of North Texas, Denton TX USA.	(\$ 1,000)
2017-2019	Masters Scholarship, UET, Taxila Pakistan.	(PKR 2,80000)
2018	Prime Minister Laptop, Prime Minister of Pakistan.	
2014	Chief Minister Laptop, Chief Minister of Punjab, Pakistan.	

Professional Services

Journal, Reviewer, Applied Soft Computing Journal

Elsevier

Journal, Reviewer, Trans. on Pattern Analysis and Machine Intelligence (TPAMI)

IEEE

Mentoring & Academic Service

2025	TPC Member , 16th IFIP Wireless and Mobile Networking Conference	Leuven, Belgium
2025	As a Reviewer , 30th ESORICS	
2025	Session Chair: Wireless Communications ,	IWCMC UAE.
2023-2024	Sammar Elgaili Khogali Suleiman , Master Student	HBKU
2023-2024	Maryam Hamad M A Al-Malki , Master Student	HBKU

Publications

PEER-REVIEWED JOURNALS

- J-1 Irfan, M.**, Fernandez, J. H., Omri, A., Sciancalepore, S., & Oligeri, G. 2025
Device Fingerprinting in Power Line Communications. Ad Hoc Networks, Elsevier. [**IF 4.8**]
- J-2 Irfan, M.**, Omri, A., Fernandez, J. H., Sciancalepore, S., & Oligeri, G. 2025
Detecting Jamming in Smart Grid Communications via Deep Learning. JCP, MDPI. [**CiteScore 9.1**]
- J-3 Irfan, M.**, & Khan, M.A. 2025
Cryptographically Secure PRNG Design using Robust Chaotic Tent Map. Cogent Engineering, T&F. [**IF 2.5**]
- J-4 Irfan, M.**, Sadighian, A., Tanveer, A., Al-Naimi, S. J., & Oligeri, G. 2024
A Survey on Detection and Localization of False Data Injection Attacks in Smart Grids. IET CPSTA. [**IF 0.8**]
- J-5 Irfan, M.**, Ali, A., Khan, M. A., Ehatisham-ul-Haq, M., Mehmood Shah, S. N., Saboor, A., & Ahmad, W. 2020
PRNG design using hyper-chaotic modified robust logistic map. Electronics, MDPI. [**IF 2.6**]

PEER-REVIEWED CONFERENCES

- C-1 Irfan, M.**, Al-Malki, M., Oligeri, G., Sciancalepore, S., Hamdoui, B., & Fernandez, J. H. 2025
Radio Jamming Against Device Fingerprinting in Power Line Communications. CCNC, IEEE. [Accepted, Rank **B**]
- C-2 Irfan, M.**, Sciancalepore, S., & Oligeri, G. 2025
Shifting Signatures: The Ephemeral Nature of the RF on the USRP X310 CNS (W), IEEE. [Rank **A**]
- C-3 Irfan, M.**, Sciancalepore, S., & Oligeri, G. 2025
Preventing Radio Fingerprinting through Low-Power Jamming. AsiaCCS, ACM. [Rank **20.4%**]
- C-4 Irfan, M.**, Al-Malki, M., Sciancalepore, S., & Oligeri, G. 2024
Radio Frequency Fingerprinting: Models, Methodologies and Performance. IWCMC. IEEE. [Rank **B**]
- C-5 Irfan, M.**, Khan, M. A., & Oligeri, G. 2024
Design of Key-dependent S-Box using Chaotic Logistic Map for IoT-Enabled Smart Grid Devices. SGRE, IEEE.
- C-6 Irfan, M.**, Omri, A., Hernandez, J., Sciancalepore, S., & Oligeri, G. 2023
Jamming Detection in Power Line Communications Leveraging Deep Learning Techniques. ISNCC, IEEE. [Rank **C**]

BOOK CHAPTER

- BC-1 Irfan, M.**, & Oligeri, G. 2025
Security and Privacy for Smart Grid Communications. [Inprogress]

References

Dr. Gabriele Oligeri

ASSOCIATE PROFESSOR & PHD ADVISOR
College of Science and Engineering

HBKU, Doha, Qatar.
goligeri@hbku.edu.qa

Dr. Savio Sciancalepore

ASSISTANT PROFESSOR
Department of Mathematics and Computer Science

TU/e, Netherlands.
s.sciancalepore@tue.nl

Dr. Javier Hernandez Fernandez
TECHNICAL DIRECTOR
Iberdrola Innovation Middle East Doha Qatar.

Iberdrola, Qatar.
javier.hernandez@iberdrola.com